

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

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| In the Matter of |) | |
| |) | |
| Service Rules for Advanced Wireless Services |) | WT Docket No. 04-356 |
| in 1915-1920 MHz, 1995-2000 MHz, 2020-2025 |) | |
| MHz and 2175-2180 MHz Bands |) | |
| |) | |
| Service Rules for Advanced Wireless Services |) | WT Docket No. 02-353 |
| in the 1.7 GHz and 2.1 GHz Bands |) | |

**COMMENTS OF
CTIA – THE WIRELESS ASSOCIATION™**

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SUMMARY

CTIA – The Wireless Association™ (“CTIA”) supports the adoption of flexible use, market-oriented service rules for the 1915-1920/1995-2000 MHz band (“H block”) and the 2020-2025/2175-2180 MHz band (“J block”) designated for advanced wireless services (“AWS”) – but emphasizes that the Commission must adopt more stringent H block technical limits than the *NPRM* proposed in order to avoid significant and widespread harmful interference to millions of existing PCS handsets.

With respect to service, licensing, and other non-technical rules, CTIA urges the Commission to adopt rules that are consistent with the following recommendations:

- CTIA supports the Commission’s tentative conclusion to permit a licensee to use this spectrum for any use permitted by the Table of Allocations, consistent with the technical limits discussed below. CTIA supports a “PCS model” regulatory framework but does not object to adoption of a Part 27 framework, provided that the technical rules are consistent with Part 24 and the technical limits discussed below.
- CTIA strongly supports the Commission’s proposal to adopt a geographic area licensing scheme for these bands. In light of the proximity of the H block to PCS spectrum, CTIA urges the Commission to license the H block on a geographic area basis consistent with the blocks used with PCS. With respect to the J block, CTIA suggests that the Commission establish geographic area licensing using the twelve Regional Economic Area Groupings (“REAGs”).
- CTIA submits that, given the state of competition in the CMRS market, neither *a priori* band-specific spectrum aggregation limits nor eligibility restrictions are necessary for these bands.
- CTIA believes that a 10-year or longer license term, combined with a strong renewal expectancy, is necessary in order to encourage investment to develop these bands.
- The Commission should consider whether the existing market incentives to put this spectrum to its highest and best use obviate the need for any regulatory performance requirements. At most, CTIA believes the FCC should adopt a “substantial service” requirement at license renewal.
- CTIA strongly supports allowing use of partitioning and disaggregation, as well as the Commission’s secondary markets policies, in these blocks of spectrum.

- CTIA believes that the public interest will best be served by licensing this spectrum using competitive bidding pursuant to section 309(j) of the Communications Act.

With respect to the technical rules, CTIA notes that millions of wireless subscribers rely on PCS handsets that were designed when the 1915-1920 MHz band was designated for unlicensed use and posed no practical risk of interference. Given the new interference paradigm created by the AWS designation, CTIA contracted with two laboratories to conduct tests on the potential for H block mobile transmitters to cause interference into the PCS mobile receive band (1930-1990 MHz). The test results demonstrate that the technical limits proposed in the *NPRM* would not protect incumbent licensees from harmful interference, as detailed below:

- The tests results demonstrate that if the H block frequencies are used for a PCS-like service, transmissions by mobile units in the upper two-thirds of the 1915-1920 MHz band will cause harmful interference to PCS receivers if operated at the levels proposed in the *NPRM* – an H block power limit of 23 dBm (200 mW) and an out-of-band emission limit of -60 dBm/MHz or alternatively -66 dBm/MHz.
- At the *NPRM*'s power levels, wherever PCS signals are weak but still acceptable (*e.g.*, indoors, inside trains or buses, and at the edges of PCS coverage areas), PCS callers will experience additional lost calls, distorted audio, inability to make and/or receive calls, inability to determine location (E-911), and lower data rates when they are in close proximity to an H block mobile device operating at or near full power. While the design parameters of today's handsets provide interference protection between two mobiles operating at a separation much less than one meter, the Commission's proposal would subject PCS handsets to such harmful interference where H block devices are transmitting as far as 8 meters (26 feet) away in some instances.
- Based on a review of the test data, and relying on certain reasonable assumptions, an H block power limit of 5 dBm for transmissions in the upper third of the 1915-1920 MHz band and a power limit of 8 dBm for transmissions in the middle third of the band would protect existing PCS handsets from two types of interference, intermodulation and overload, at one meter. A higher H block power level of 13 dBm for transmissions in the upper third of the H block and a power limit of 16 dBm for the middle third of the H block would protect existing PCS handsets against overload interference at one meter.
- An out-of-band emission limit in the range of -74 dBm/MHz to -76 dBm/MHz, where such power is calculated on an average (not peak) basis, would protect PCS handsets from H block emissions into the PCS band.

- With respect to other H block technical issues, CTIA supports adoption of Part 24 Broadband PCS technical rules. Regarding the 1995-2000 MHz portion of the H block, CTIA remains very concerned about the MSS/ATC mobile transmit operations in the immediately adjacent 2000-2020 MHz band and urges the Commission to consider how to address this risk.
- With respect to the J block technical rules, CTIA urges the Commission to adopt rules consistent with the Part 24 rules.

The Commission's adoption of service and technical rules consistent with the test results will best serve the public interest by making more spectrum available for advanced wireless services while ensuring that millions of existing PCS handsets are protected from harmful interference.

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Attachment A: Declaration of Dr. Charles L. Jackson

Attachment B: WINLAB Report, PCS H Block Interference Tests

Attachment C: PCTEST Report, FCC H Block Testing

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**COMMENTS OF
CTIA – THE WIRELESS ASSOCIATION™**

CTIA – The Wireless Association™ (“CTIA”)¹ hereby submits its comments in response to the Notice of Proposed Rulemaking (“*NPRM*”) in the above-captioned proceedings.² The *NPRM* proposes application, licensing, operating, and technical rules for services to be licensed in the 1915-1920/1995-2000 MHz band (“H block”) and the 2020-2025/2175-2180 MHz band (“J block”) – spectrum the FCC has designated for advanced wireless services (“AWS”).³ CTIA supports the adoption of flexible use, market-oriented service rules – but emphasizes that,

¹ CTIA – The Wireless Association™ (formally known as the Cellular Telecommunications & Internet Association) is the international organization of the wireless communications industry for both wireless carriers and manufacturers. Membership in the organization includes Commercial Mobile Radio Service (“CMRS”) providers and manufacturers, including cellular, broadband PCS, ESMR, as well as providers and manufacturers of wireless data services and products.

² See In the Matter of Service Rules for Advanced Wireless Services in 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands, WT Docket No. 04-356, *Notice of Proposed Rulemaking*, 19 FCC Rcd 19263 (2004) (“*NPRM*”).

³ See Amendment of Part 2 of the Commission’s Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems, ET Docket No. 00-258, *Sixth Report and Order*, *Third Memorandum Opinion and Order* and *Fifth Memorandum Opinion and Order*, FCC 04-219 (rel. Sept. 22, 2004) (“*AWS Sixth Report and Order*”).

without adequate safeguards, operations in the 1915-1920 MHz portion of the H block will create harmful interference to existing PCS handsets.

Currently there are more than 170 million wireless subscribers in the United States – the majority of whom use mobile devices that can operate in the PCS band. These units, as well as those in the delivery pipeline and in manufacturing facilities, were designed when the 1915-1920 MHz band was designated for unlicensed use and posed no practical risk of interference. Given the new interference paradigm created by the AWS designation, CTIA has focused heavily on the risk of H block transmissions interfering with PCS users, and these comments reflect that focus. Following release of the *NPRM*, CTIA contracted with two laboratories to conduct tests on the potential for mobile transmitters operating in the H block to cause interference into PCS bands. As discussed below, the test results demonstrate that the Commission must adopt more stringent technical limits than it proposed in order to protect PCS subscribers from harmful interference.

I. GENERAL REGULATORY FRAMEWORK

A. Flexible Spectrum Use Consistent with Appropriate Technical Limits

CTIA supports the Commission’s tentative conclusion that the service rules for the H and J blocks should permit a licensee to use this spectrum for any use permitted by the Table of Allocations.⁴ As CTIA has previously noted, a policy of flexible use, when combined with the other “property-like” rights of exclusivity and transferability, promotes technology neutrality, fosters the development of innovative, state-of-the-art service offerings, and creates a strong incentive to put spectrum to its highest valued use.⁵

⁴ See *NPRM* at ¶ 13.

⁵ See Comments of CTIA, WT Docket No. 02-353, at 2-3 (filed Feb. 7, 2003).

The Commission, however, must not lose sight of its fundamental obligation to protect users of existing licensed services from interference. To that end, the *NPRM* seeks comment on the merits of applying a flexible use policy here in light of Section 303(y)⁶ which, as the Commission has noted, “reflects Congressional concern that proposals for the flexible use of spectrum have the potential, if not thoroughly considered, to create interference between services and discourage investment and technical innovation.”⁷ Section 303(y) allows the Commission to adopt flexible use policies only if it finds, among other things, that “such use would not result in harmful interference among users.”⁸

With respect to the introduction of licensed services into the H block, the Commission rightly observes, “we are concerned about potential interference from handsets transmitting in the 1915-1920 MHz band to PCS handsets receiving in the 1930-1990 MHz band.”⁹ As the attached test results and declaration of Dr. Charles L. Jackson makes clear, H block mobile transmissions would impair PCS operations nearby unless the Commission adopts technical limits that are more stringent than those proposed in the *NPRM*.

⁶ See *NPRM* at ¶ 13.

⁷ Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission’s Rules, *First Report and Order*, 15 FCC Rcd 476, 481-82 ¶ 10 (2000).

⁸ *NPRM* at ¶ 11 (citing 47 U.S.C. § 303(y)). Although the Commission has interpreted Section 303(y) to apply to inter-service flexibility involving the international and domestic allocations process, it nonetheless has concluded on several occasions that it is appropriate to “consider[] the criteria [contained in section 303(y)] under our broader public interest mandates in the statute, when making decisions that may affect the broader allocation through service rules.” Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission’s Rules, 15 FCC Rcd at 487 ¶ 24; Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands, *Report and Order and Notice of Proposed Rulemaking*, 18 FCC Rcd 1962, 2063-64 ¶ 208 (2003).

⁹ *NPRM* at ¶ 86 (*references omitted*).

CTIA supports the Commission’s tentative decision to allow any permitted use or combination thereof – provided the Commission adopts strict technical limits to protect PCS handsets from harmful interference by H block operations in the 1915-1920 MHz band.

B. Regulatory Framework

CTIA believes that the Commission should allow any use permitted by the Table of Allocations and supports a “PCS model” regulatory framework for the H and J blocks. CTIA does not object to the Commission’s tentative conclusion to license the H and J blocks under the regulatory framework of Part 27 of the Commission’s rules, provided the technical rules are consistent with the Part 24 Broadband PCS rules (except for the H block power and out-of-band emission (“OOBE”) limits discussed below).¹⁰

Part 27 embraces the Commission’s flexible use policy. While adoption of appropriate limits on H block transmit power may raise some challenges, there are many useful and highly valued applications that could be deployed consistent with the AWS designation, Part 27, and the technical limits identified below.¹¹

C. Size of Geographic License Area

CTIA strongly supports the Commission’s tentative conclusion to adopt a geographic area – rather than a site-by-site – licensing scheme for the H and J blocks. As noted in the *NPRM*, geographic area licensing affords licensees flexibility to respond to market demand, maximizes the use of spectrum by permitting licensees to coordinate usage across an entire geographic area, reduces the regulatory burdens and transaction costs associated with site-by-site

¹⁰ See *id.* at ¶ 14.

¹¹ Examples include use of the H block for (a) terrestrial mobile; (b) fixed services, such as wireless local loop or backhaul; (c) an asymmetric data service; (d) complementary spectrum to an existing PCS operation for use near cell sites; and (e) air-to-ground.

licensing, and promotes economic efficiency and competition.¹² Geographic area licensing has particular advantages where wireless service offerings require ubiquity and mobility over wide areas.¹³ Finally, as the rapid development and growth of PCS services shows, geographic area licensing can facilitate the speedy deployment of innovative services to large segments of the American public.¹⁴

In light of the proximity of the H block to PCS spectrum, CTIA urges the Commission to license the H Block on a geographic area basis consistent with the blocks used with PCS.¹⁵ As noted above, one highly valued use of the H block may be as complementary spectrum to an existing PCS offering. The Commission should adopt a geographic area licensing scheme that recognizes this potential and facilitates the ability of PCS licensees to add nearby H block spectrum to specific markets where additional spectrum is needed. CTIA also supports the *NPRM*'s view that some applications may only be effective and highly valued if offered on a nationwide basis. CTIA thus urges the Commission to adopt a combinatorial bidding methodology that could be used by bidders to achieve the sized license area they prefer – if it proves to be feasible after a full evaluation.

With respect to the J block, CTIA suggests that the Commission establish geographic area licensing using the twelve Regional Economic Area Groupings (“REAG”). Use of REAGs would allow the Commission to meet the interests of those applicants seeking to create a regional

¹² See *NPRM* at ¶ 19.

¹³ *Id.*

¹⁴ *Id.*

¹⁵ Although the *NPRM* notes that geographic licensing via Metropolitan Trading Areas (“MTAs”) and Basic Trading Areas (“BTAs”) is not available due to licensing issues with Rand McNally, *see id.* at nn. 47, 53, the proximity of the H block to PCS spectrum suggests that the most economically efficient outcome would be for the Commission to negotiate an additional blanket license with Rand McNally for this block of spectrum. CTIA is prepared to work cooperatively with the Commission and Rand McNally toward this end.

service area and could be aggregated to form a nationwide service area. As the Commission observed in the *1.7/2.1 AWS Order*, “[t]hese types of large licensing areas permit carriers to take advantage of economies of scale and they allow service providers greater flexibility in the build-out of their services, since they are less constrained by geographical license limits.”¹⁶

CTIA believes this mix of different sized geographic areas best serves the Commission’s goal of balancing efficiency with the dissemination of licenses among a variety of applicants. As a result of the PCS licensing scheme, carriers with national footprints have emerged, and have already begun the process of deploying advanced wireless services on these nationwide networks. Adopting PCS market areas in the H block and REAGs in the J block, in conjunction with the geographic licenses that will become available as part of the 1.7 / 2.1 GHz AWS spectrum, will provide varying geographic area opportunities both for existing wireless providers and new entrants.

II. LICENSING AND OPERATING RULES

A. Spectrum Aggregation Limits and Eligibility Restrictions

CTIA supports the Commission’s tentative conclusion that service rules establishing spectrum aggregation limits are not necessary for the H and J blocks.¹⁷ The CMRS industry continues to experience intense competition, innovation, lower prices for consumers, and increased diversity of service offerings.¹⁸ As the *NPRM* notes, when the Commission decided to “sunset” the CMRS spectrum aggregation limit, it found that the cap “was unnecessarily

¹⁶ Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands, *Report and Order*, 18 FCC Rcd 25162, 25176 ¶ 38 (2003) (“*1.7/2.1 AWS Order*”).

¹⁷ See *NPRM* at ¶ 67.

¹⁸ See Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, WT Docket No. 04-111, *Ninth Report*, FCC 04-216 (rel. Sept. 28, 2004).

inflexible and could be preventing beneficial arrangements that promote efficiency without undermining competition.”¹⁹ CTIA submits that *a priori* band-specific spectrum aggregation limits are not necessary for the H and J blocks, and, like the spectrum cap itself, would be contrary to the Commission’s goal of establishing “maximum feasible flexibility in both allocations and service rules as a critical means of ensuring that spectrum is put to its most beneficial use.”²⁰ CTIA supports the Commission’s tentative conclusion not to impose inflexible *a priori* aggregation limits that could hamper this potential for increased competition, additional capacity, and innovative services.

CTIA also supports the Commission’s conclusion that eligibility restrictions are not necessary for the H and J blocks.²¹ As stated in the *NPRM*, “opening these bands to as wide a range of applicants as possible would encourage efforts to develop new technologies and services, while helping to ensure efficient use of this spectrum.”²² CTIA agrees, and supports the Commission’s conclusion that neither set-asides nor eligibility requirements would serve the public interest in this context.

B. License Term and Renewal Expectancy

In order to “provide a stable regulatory environment that will be attractive to investors, and thereby encourage development of these frequency bands,” the Commission proposes a license term of at least 10 years for the H and J blocks, with a renewal expectancy “similar to that afforded PCS, cellular, and Part 27 licensees,”²³ – namely, a showing of substantial service

¹⁹ *NPRM* at ¶ 67.

²⁰ *Id.* at ¶ 12.

²¹ *See id.* at ¶ 67.

²² *Id.* at ¶ 69.

²³ *Id.* at ¶ 70.

during the license term and compliance with the Communications Act and FCC policies and rules.

CTIA supports the Commission's proposal. The next generation of wireless networks entail high initial sunk costs and capital investments during deployment. CTIA believes that a license term of 10 years or longer, combined with a strong renewal expectancy, will provide investors with the necessary assurances that a sufficient amount of time will be available to recoup the initial costs of deployment.

C. Performance Requirements

The *NPRM* asks for comment on whether licensees in the H and J blocks should be subject to any performance requirements in addition to a "substantial service" requirement at license renewal.²⁴ As CTIA has previously noted, where spectrum is auctioned and licensees are subject to competitive pressures to deploy infrastructure and start earning revenues as quickly as possible, market incentives already provide licensees with every motive to maximize spectral efficiency and evolve their service offerings in new and innovative ways.²⁵ CTIA urges the Commission to consider whether the already existing strong market incentives obviate the need for any regulatory performance requirements in the AWS bands.

In a number of recent wireless allocation and service rule proceedings, the Commission has moved away from strict performance requirements (such as POP-based numerical construction benchmarks) toward "substantial service" to provide licensees a sufficient degree of

²⁴ See *id.* at ¶ 74.

²⁵ See Comments of CTIA, WT Docket No. 02-353, at 9 (filed Feb. 7, 2003); Service Rules for 746-764 and 776-794 MHz Bands, and Revision to Part 27 of the Commission's Rules, *Second Report and Order*, 15 FCC Rcd 5229, 5332 ¶ 76 ("Upper 700 MHz, *Second Report and Order* ") ("We believe use of the auction mechanism, in combination with competitive pressure from the availability of other bands for commercial and private wireless services . . . will create an incentive for the Guard Band Manager to lease spectrum in a way that will ensure its efficient and intensive use.").

flexibility to develop new service offerings.²⁶ This shift has occurred, in part, due to the Commission's sage recognition that strict performance requirements for auctioned licenses may impair or undermine efficient use of the spectrum.²⁷ Particularly where, as is the case here, there is a broad range of new and innovative service offerings contemplated, the Commission has refrained from imposing specific performance requirements on licensees out of the concern that inflexible performance requirements might impair innovation and unnecessarily limit the types of service offerings licensees can provide.²⁸ If the Commission determines that some type of performance requirements are necessary in these bands, allowing licensees to demonstrate that they are meeting the goals of a performance requirement with a substantial service showing tailored to their particular type of operations avoids this pitfall.

D. Partitioning, Disaggregation and Leasing of Spectrum

The *NPRM* also proposes to permit H and J block licensees to partition their service areas and to disaggregate their spectrum.²⁹ CTIA strongly supports permitting partitioning and disaggregation in these blocks of spectrum. In combination with the geographic area licensing

²⁶ See, e.g., *1.7/2.1 AWS Order* at ¶ 68; *Upper 700 MHz Second Report and Order*, 15 FCC Rcd at 5332 ¶ 76; Amendment of the Commission's Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Bands, *Report and Order and Second Notice of Proposed Rule Making*, 12 FCC Rcd 18600, 18623 ¶¶ 41-43 (1997) (codified at 47 C.F.R. § 101.17(a)) ("*39 GHz Report and Order*"); Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, To Reallocate the 29.5-30.0 GHz Frequency Band, To Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services, *Second Report and Order, Order on Reconsideration, and Fifth Notice of Proposed Rulemaking*, 12 FCC Rcd 12545, 12659 ¶ 267 (1997) ("*LMDS Second Report and Order*").

²⁷ See e.g., *1.7/2.1 AWS Order* at ¶ 13; *Upper 700 MHz Second Report and Order*, 15 FCC Rcd at 5332 ¶ 77; *39 GHz Report and Order*, 12 FCC Rcd at 18623 ¶¶ 41-43; *LMDS Second Report and Order*, 12 FCC Rcd at 12659 ¶ 267.

²⁸ See *1.7/2.1 AWS Order* at ¶ 13; *Upper 700 MHz Second Report and Order*, 15 FCC Rcd at 5332 ¶ 77; *39 GHz Report and Order*, 12 FCC Rcd at 18623 ¶ 42; *LMDS Second Report and Order*, 12 FCC Rcd at 12659 ¶ 267.

²⁹ See *NPRM* at ¶ 77.

scheme set forth above, partitioning and disaggregation will allow licensees to use spectrum more efficiently, speed service to underserved areas, stimulate competition, provide increased flexibility to licensees and facilitate the acquisition of spectrum by a wide variety of entities, both large and small. Recognition of these benefits has lead the Commission to permit partitioning and/or disaggregation in a wide variety of contexts, including 1.7 GHz / 2.1 GHz AWS,³⁰ both Broadband and Narrowband PCS,³¹ Multipoint Distribution Service (MDS),³² 800 MHz and 900 MHz SMR,³³ 39 GHz fixed point-to-point microwave,³⁴ WCS,³⁵ Local Multipoint Distribution Service (LMDS),³⁶ Maritime Services,³⁷ and paging.³⁸

³⁰ See *1.7/2.1 AWS Order* at ¶ 80.

³¹ See *Geographic Partitioning and Spectrum Disaggregation by Commercial Mobile Radio Services Licensees, Implementation of Section 257 of the Communications Act: Elimination of Market Entry Barriers, Report and Order and Further Notice of Proposed Rulemaking*, 11 FCC Rcd 21831 (1996) (Broadband PCS); *Amendment of the Commission's Rules to Establish New Personal Communications Services, Narrowband PCS Implementation of Section 309(j) of the Communications Act – Competitive Bidding, Narrowband PCS, Second Report and Order and Second Further Notice of Proposed Rulemaking*, 15 FCC Rcd 10456 (2000) (Narrowband PCS).

³² See *Amendment of Parts 21 and 74 of the Commission's Rules With Regard to Filing Procedures in the Multipoint Distribution Service and in the Instructional Television Fixed Service, and Implementation of Section 309(j) of the Communications Act -- Competitive Bidding, Report and Order*, 10 FCC Rcd 9589, 9614-15 ¶¶ 46-47 (1995).

³³ See *Amendment of Part 90 of the Commission's Rules to Facilitate Future Development of SMR Systems in the 800 MHz Frequency Band, Implementation of Sections 3(n) and 322 of the Communications Act -- Regulatory Treatment of Mobile Services, Implementation of Sections 309(j) of the Communications Act -- Competitive Bidding, Second Report and Order*, 12 FCC Rcd 19079, 19127-53 ¶¶ 138-227 (1997) (“*800 MHz SMR Second Report and Order*”).

³⁴ See *39 GHz Report and Order*, 12 FCC Rcd at 18634-36, ¶¶ 70-74.

³⁵ See *Amendment of the Commission's Rules to Establish Part 27, the Wireless Communications Service ("WCS"), Report and Order*, 12 FCC Rcd 10785, 10836-39 ¶¶ 96-103 (1997).

³⁶ See *Rule Making to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, To Reallocate the 29.5-30.0 GHz Frequency Band, To Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services, Fourth Report and Order*, 13 FCC Rcd 11655 (1998) (“*LMDS Fourth Report and Order*”).

Further, CTIA supports the proposal to apply the spectrum leasing policies set forth in the *Secondary Markets* proceeding to the H and J blocks.³⁹ The Commission's secondary markets initiative is allowing spectrum to flow more freely among users and uses in response to economic demand, and CTIA believes those same opportunities and benefits will extend to the H and J blocks.

E. Other Operating Requirements

CTIA agrees that, although these spectrum blocks will be licensed under one specific Rule part, the Commission may appropriately subject licensees in the H and J blocks to procedural and operational requirements in other Rule parts, such as the application filing procedures set forth in Part 1 and, to the extent licensees offer CMRS, the provisions of Part 20.

CTIA seeks clarification with regard to the scope of discussion related to Part 101. Specifically, the *NPRM* seeks comment on the application of general provisions of several rule parts, including Part 101. In the *1.7 GHz / 2.1 GHz AWS* proceeding, CTIA expressed concern that a CMRS provider offering fixed services in those AWS bands could be subject to Part 101 requirements, even though CMRS licensees (like PCS providers) are permitted to offer fixed services in other spectrum without being subject to these Part 101 requirements. The Commission acknowledged the potential for disparate regulatory treatment and agreed and

³⁷ See Amendment of the Commission's Rules Concerning Maritime Communications, *Third Report and Order and Memorandum Opinion and Order*, 13 FCC Rcd 19853, 19872-74, ¶¶ 38-43 (1998).

³⁸ See Revision of Part 22 and Part 90 of the Commission's Rules to Facilitate Future Development of Paging Systems, Implementation of Section 309(j) of the Communications Act – Competitive Bidding, *Memorandum Opinion and Order on Reconsideration and Third Report and Order*, 14 FCC Rcd 10030, 10101 ¶¶ 132-33 (1999).

³⁹ See *NPRM* at ¶ 79.

concluded that such licensees “will not be subject to the provisions contained in Part 101.”⁴⁰

CTIA seeks the same clarification here.

III. TECHNICAL RULES

Consumers depend on high-quality mobile services for personal, commercial, and emergency communications. They purchase wireless devices and services with the expectation that wireless carriers will meet their increasing demand for dependable services. Carriers in turn invest billions of dollars in their networks to make this happen. A critical element of wireless service quality involves the ability to minimize the risk of mobile-to-mobile interference – an issue that is relevant to transmission and reception within a single handset and between two handsets operating in close proximity. The *NPRM* recognizes that transmissions in the H and J blocks “could cause harmful interference to services operating in adjacent bands” and thus proposes technical limits intended to protect those services from interference.⁴¹ As demonstrated below, the Commission must adopt more stringent limits than those proposed in the *NPRM* to protect today’s handsets and the PCS service from significant and widespread interference.

CTIA contracted with two laboratories to evaluate the performance of PCS handsets in the presence of simulated H block operations. The results identify the circumstances under which H block operations could cause harmful interference into the PCS mobile receive band, 1930-1990 MHz. The tests demonstrate that if the H block frequencies are used for a PCS-like service, transmissions by mobile units in the upper two-thirds of the 1915-1920 MHz band will cause harmful interference to PCS receivers if operated at the levels proposed in the *NPRM* – an H block power limit of 23 dBm (200 mW) and an out-of-band emission limit of -60 dBm/MHz

⁴⁰ 1.7/2.1 AWS Order at ¶ 86.

⁴¹ *NPRM* at ¶ 86.

or alternatively -66 dBm/MHz. At these levels, wherever PCS signals are weak but still acceptable (*e.g.*, indoors, inside trains or buses, and at the edges of PCS coverage areas), callers will experience additional lost calls, distorted audio, inability to make and/or receive calls, inability to determine location (E-911), and lower data rates when they are in close proximity to an H block mobile device operating at or near full power. While the design parameters of today's handsets provide interference protection between two mobiles operating at a separation much less than one meter,⁴² the Commission's proposal would subject PCS handsets to such harmful interference where H block devices are transmitting as far as 8 meters (26 feet) away in some instances.⁴³

By contrast, the Commission can avoid such impairment by choosing more stringent limits on H block power and out-of-band emissions. Based on a review of the test data, and applying certain reasonable assumptions described below, an H block power limit of 5 dBm for transmissions in the upper third of the 1915-1920 MHz band and a power limit of 8 dBm for transmissions in the middle third of the band would protect existing PCS handsets from both intermodulation and overload interference at one meter. Based on the same data and assumptions, a higher H block power level of 13 dBm for transmissions in the upper third of the H block and a power limit of 16 dBm for the middle third of the H block would protect existing PCS handsets against overload interference at one meter. An out-of-band emission limit in the

⁴² One meter is often used as the appropriate protection radius in analyses like this one to assess interference protection levels. Two mobile subscribers, however, will often be using their wireless devices within one meter – oftentimes at a distance of 0.5 meters (about 20 inches). However, given the customary use of one meter in such calculations CTIA has used that distance.

⁴³ This 8 meter area of interference is based on an overload interference analysis only. For those circumstances that involve intermodulation interference, the Commission's proposal would result in interference up to 18 meters (60 feet) in some instances, as described below.

range of -74 dBm/MHz to -76 dBm/MHz, where such power is calculated on an average (not peak) basis, would protect PCS handsets from H block emissions into the PCS band.

More generally, CTIA supports adoption of technical rules that are consistent with the rules established in Part 24 for Broadband PCS bands for both the H and J blocks and identifies other technical considerations relevant to the H and J blocks.

A. H Block

1. Background

The introduction of AWS operations into the 1915-1920 MHz portion of the H block raises new and significant interference questions for Broadband PCS operations. Currently there are more than 170 million wireless subscribers in the United States – the majority of whom use mobile devices that can operate in the PCS band. These units, as well as those in the delivery pipeline and in manufacturing facilities, were designed when the 1915-1920 MHz band was designated for unlicensed use and posed no practical risk of interference into the PCS mobile receive band. With the decision to designate the H block for AWS, the Commission observes, “we are concerned about potential interference from handsets transmitting in the 1915-1920 MHz band to PCS handsets receiving in the 1930-1990 MHz band.”⁴⁴

Broadband PCS operations in the United States use frequency division duplex (“FDD”) technology, which requires frequency separation between base and mobile transmissions. In practice, the 1915-1920 MHz block has served as part of a 20 MHz “guard band” between the PCS mobile transmit band (1850-1910 MHz) and the PCS mobile receive band (1930-1990 MHz). When the Commission recently redesignated the 1910-1915 MHz block from unlicensed use to Part 24 Broadband PCS and assigned the spectrum to Nextel as part of the *800 MHz*

⁴⁴ *NPRM* at ¶ 86 (*references omitted*).

Report and Order, the decision raised fewer technical concerns because there was general agreement that the frequency separation could be reduced by five megahertz (*i.e.*, to a 15 MHz separation) with appropriate service rules.⁴⁵ The decision to designate the H block for AWS generated greater concern from the PCS industry,⁴⁶ but the Commission chose to act prior to testing in part because the instant *NPRM* is intended to “ensure that we adopt the appropriate technical rules to protect incumbent broadband PCS users.”⁴⁷ The Commission has correctly identified the “threshold” technical issue at hand – “whether, with a reduction in frequency separation from the current level, AWS operations are technically feasible without impairing incumbent PCS operations.”⁴⁸ CTIA believes that the Commission can avoid impairment to current PCS handsets by setting appropriate H block technical limits such as those described below.

H block operations pose three distinct interference risks to PCS handsets. The in-band operation of H block signals has the potential to impair PCS reception through two mechanisms: overload (also referred to as desensitization) and intermodulation. Overload occurs when a receiver does not have a filter that can sufficiently block out unwanted strong signals at frequencies near the frequency of the desired signal. Intermodulation occurs when signals at two

⁴⁵ See *AWS Sixth Report and Order* at ¶ 12; see also Comments of CTIA, ET Docket No. 00-258, at 2 (filed Apr. 14, 2003) (“CTIA supports creation of a ‘G Block’ that pairs 1910-1915 MHz with 1990-1995 MHz for a PCS-like terrestrial service” subject to Part 24 technical rules for Broadband PCS.).

⁴⁶ See, *e.g.*, Letter to Marlene H. Dortch, Secretary, FCC, from Luisa L. Lancetti, Sprint Corporation, ET Docket No. 00-258 (Sept. 1, 2004); Letter to Marlene H. Dortch, Secretary, FCC, from Thomas J. Sugrue and Robert A. Calaff, T-Mobile USA, Inc., ET Docket No. 00-258 (Aug. 20, 2004); Letter to Marlene H. Dortch, Secretary, FCC, from Donald C. Brittingham, Verizon Wireless, ET Docket No. 00-258 (Aug. 27, 2004); Letter to Marlene H. Dortch, Secretary, FCC, from Paul Garnett, CTIA, ET Docket No. 00-258 (Aug. 18, 2004).

⁴⁷ *AWS Sixth Report and Order* at ¶ 21.

⁴⁸ *Id.*

frequencies combine to generate a new signal at a third frequency, creating unwanted interference. Both overload and intermodulation can be addressed by setting appropriate power limits on the interfering signal. In addition, radio operations result in additional energy extending into adjacent frequencies, which can be addressed by out-of-band emission (“OOBE”) limits.

Overload. As Dr. Jackson observes, the electronics in the PCS handset must protect the handset’s receiver from both the strong signal transmitted by the handset and from signals transmitted by nearby PCS users.⁴⁹ The key building block in PCS handsets that provides this protection is the duplexer filter. A duplexer filter connects a handset’s transmitter and receiver to the handset’s antenna but isolates the transmitter from the receiver. The duplexers in existing PCS handsets were designed to block PCS handset transmit signals (1850-1910 MHz) from flowing to the receiver portion of a handset while permitting PCS base station signals (1930-1990 MHz) to pass to the receiver. As noted above, the 1915-1920 MHz portion of the H block is part of the transition region for the duplexer filters to change from blocking signals to passing signals. Although a 15-20 MHz block may seem like significant frequency separation, these filters operate at 1900 MHz, so this separation is only 1% of the center frequency of the filter. As Dr. Jackson states, “The filters in today’s PCS receivers were designed to reject strong signals from nearby transmitters in the top of the C block – just below 1910 MHz – and to accept signals at the bottom of the A-block at 1930 MHz; they were not designed to reject strong signals from nearby transmitters operating in the H block.”⁵⁰

⁴⁹ See Declaration of Dr. Charles L. Jackson at 13-14 (Attachment A)(“Jackson Declaration”).

⁵⁰ *Id.* at 14.

Intermodulation. H block transmissions may also result in intermodulation products that can result in unwanted interference in the PCS band. As Dr. Jackson observes, a CDMA or UMTS PCS handset operating in the B block will be transmitting uplink (mobile-to-base) while listening on the downlink (base-to-mobile).⁵¹ GSM handsets do not have a similar intermodulation problem because of fundamental differences between GSM and CDMA technologies. An H block signal located exactly 40 MHz above the PCS uplink signal can combine with the uplink signal from the PCS handset to create an interfering signal on the downlink that can impair operation of the receiver in the handset.

Out-of-Band Emissions. OOB E are a natural consequence of the operation of any radio system. An H block signal that is out-of-band can be an in-band signal for a PCS receiver, which cannot use filtering technology to reject that signal. Because of the patchwork nature of PCS band licensing and the need to support roaming, PCS service providers shared incentives to adopt much more stringent standards than established in the original Part 24 rules to ensure adequate protection for their subscribers.

2. Testing Process

The *NPRM* proposed power limits and OOB E limits for 1915-1920 MHz mobile operations and asked commenters to provide “test reports and technical analyses or studies” in support of their views.⁵² Following release of the *NPRM*, CTIA contracted with two testing laboratories, PCTEST and Rutgers University’s WINLAB, to perform tests to identify the impact

⁵¹ See *id.* at 12

⁵² *NPRM* at ¶ 107; see also *NPRM* at ¶ 91.

of H block mobile transmissions on existing PCS handsets.⁵³ CTIA member companies provided each laboratory with handset models that represent a substantial fraction of handsets currently in use. The two laboratories' reports provide test results on a total of 11 handsets from several manufacturers, representing current production equipment and state-of-the-art designs, including 6 CDMA phones, 4 GSM phones, and 1 UMTS phone.⁵⁴

As their reports indicate, the laboratories engaged in a series of tests to identify the handsets' performance in the presence of (1) an H block uplink signal; (2) as a comparison, an uplink signal in the top of the traditional PCS band; (3) cochannel interference such as would be caused by out-of-band emissions by an H block mobile unit; and (4) intermodulation caused by H block signals. They used realistic test conditions in order to simulate actual PCS network operating conditions.

3. Test Results and Interference Limits

i. Transmit Power

Overload. The laboratories conducted a series of tests to ascertain the H block signal level at which each PCS handset would suffer interference overload under varying operating configurations – different temperatures, different modulation technologies and carrier frequencies of the interfering H block signal, and different received signal levels. To assess the risk of interference, the tests introduced H block signals in close proximity to a PCS handset receiving a weak – but still acceptable – signal typical of a call inside an office building or at the reaches of PCS coverage, -100 dBm and - 105 dBm. Although the *NPRM* suggests that PCS

⁵³ PCTEST is a commercial test laboratory located in Columbia, Maryland and is certified and accredited by several organizations, including ANSI, NMI (Netherlands), NIST, and CTIA. WINLAB is a research laboratory in New Brunswick, New Jersey that receives funding from the National Science Foundation and the Defense Advanced Research Projects Agency, among others.

⁵⁴ See the WINLAB Report, PCS H Block Interference Tests (Attachment B) & the PCTEST Report, FCC H-Block Testing (Attachment C).

handsets perform no better than the minimum performance required under industry standards of -104 dBm (CDMA) or -102 dBm (GSM), the tests demonstrate that real world receivers perform even better, at signal strengths as low as -108 dBm to -109 dBm.⁵⁵ The decision to use test signal levels ranging from -97 dBm to -105 dBm, therefore, provides a sensible assessment for the real life risk of interference.

Based on a representative sampling of the tests, the evidence shows that even slight degradation in receiver signal quality would have significant consequences for calls operating at the signal levels tested. As Dr. Jackson explains, the results indicate that with a receive signal level of -105 dBm and handset operation at room temperature, PCS handsets are impaired by H block signals from the upper-most channel in the H block (1918.125 MHz to 1920 MHz) ranging from -33 dBm to -2 dBm, as measured at the antenna port of the receiver.⁵⁶ The receivers most sensitive to overload interference - more than one-third of the handsets tested - experienced overload impairment with H block signals ranging from -27 dBm to -33 dBm. Under these circumstances subscribers will experience, for example, lost calls, distorted audio, and the inability to make and/or receive calls. We note that the receivers most susceptible to overload interference tended to be CDMA and UMTS handsets. As Dr. Jackson concludes, "If PCS handsets were protected so that they did not receive such overload signals at levels of -28 dBm, the bulk of the handsets would be protected against overload."⁵⁷

⁵⁵ See Jackson Declaration at 11.

⁵⁶ See *id.* at 7-8. Dr. Jackson defined a harmful signal level "as one that appreciably increased the relevant error rate—specifically an increase of about 1%. Although 1% may seem like only a slight degradation, it indicates that the system has lost its entire margin against further impairments." *Id.* at 8.

⁵⁷ *Id.* at 8.

Dr. Jackson applies a simple model to calculate H block power transmit levels that will afford interference protection to PCS handsets.⁵⁸ The calculation accounts for 38 dB of free-space loss at a distance of one meter and applies other assumptions including 1 dB of antenna gain and 4 dB of loss due to path blockage and coupling losses – for a total loss of 41 dB at one meter.⁵⁹ Thus, to achieve the overload protection of – 28 dBm as discussed above, H block power must be limited to + 13 dBm.⁶⁰

In contrast, the *NPRM*'s proposed power limit of 200mW, or 23 dBm, for a bandwidth of 1 MHz would result in frequent and widespread harmful interference to PCS handsets. H block operations at that level would create overload interference of – 18 dBm at the antenna receiver port when a one meter separation exists between the H block unit and the PCS handset. Using a representative sample of tests, Dr. Jackson found that the FCC's proposed limit would protect 5 of the 22 handset/interfering signal configurations tested. Three more handset/interfering signal configurations would be within 1 dB of protection. The other 14 would receive signals 3 or more dB above the protection level needed. The unimpaired and close handsets were all GSM handsets, whereas one CDMA handset received a signal 3 dB stronger than the unit's required protection level and the median CDMA test situation received a signal 9 dB stronger than its required protection level.⁶¹

⁵⁸ *Id.* at 14-15.

⁵⁹ As Dr. Jackson notes in his declaration it is reasonable to include in the model of the radio propagation path between an H-block unit and a PCS handset some loss in excess of the free-space loss. *See id.* at 15. Both the gain of the PCS handset's antenna and signal blockage and absorption by the users should be considered. A value of 2 dB (at each device) for blockage and an allowance of 1 dB for the PCS handset antenna gain leads to a total of -2-2+1=3 dB of such excess loss.

⁶⁰ The calculation is as follows: 13 dB = 41 dB -28 dB.

⁶¹ *See* Jackson Declaration at Figure 2.

Compared to the -28 dBm limit, the *NPRM*'s limit would establish the same interference protection at three meters rather than at one meter – thereby expanding the area of H block interference ten-fold.⁶² The increased potential for impairment is significant – especially as consumers increasingly rely on their mobile devices indoors or on buses and trains. As Dr. Jackson concludes, “[t]he tests indicate that the FCC should impose more stringent limits on the transmitted power of mobile H-Block transceivers than proposed in the *NPRM*.”⁶³

The foregoing discussion relates to H block transmissions at the uppermost end of the H block. Because the test results showed that transmissions in the middle of the H block were slightly less damaging than transmissions near the top of the H block, CTIA suggests the Commission adopt a tiered approach to H block transmission power limits. The test data shows that PCS handsets can withstand signals at levels up to about 3 dB higher than was the case at the top of the H block.⁶⁴ While a power limit of 13 dBm in the top third of the H block would provide adequate protection to adjacent licensees from overload, a power limit 3 dB higher, or 16 dBm, in the middle third of the H block would provide adequate protection.⁶⁵ The tests did not examine the appropriate power limit for the bottom third of the H block. The Commission should study this issue further, or perhaps conduct its own tests, and adopt an appropriate limit accordingly.

⁶² This assessment is derived by increasing the separation distance in order to provide the required additional attenuation. In this case, the increase must extend to a separation distance of approximately 3 meters to provide the required 10 dB of additional free-space attenuation. Thus, the area within which an H block handset can create harmful interference expands ten-fold.

⁶³ Jackson Declaration at 1.

⁶⁴ *See id.* at 17.

⁶⁵ The boundaries of the three regions are 1915-1916.875 MHz, 1916.875-1918.125 MHz, and 1918.125 MHz-1920 MHz, based on the CDMA channel limits for a CDMA carrier located at 1917.5 MHz.

CTIA emphasizes that the limits identified here are for mobile transmitters that may operate near PCS handsets. The Commission need not apply these limits to H block transmitters with fixed antennas mounted in such a fashion that consumers cannot come in close proximity to the antennas (*e.g.*, rooftops, towers, sides of buildings above the ground floor).

Intermodulation. Intermodulation products are also addressed by power limits. As Dr. Jackson's analysis makes clear, intermodulation is a serious problem for a subset of PCS operations. The relevant intermodulation problem will occur for CDMA or UMTS systems operating in the PCS B block – specifically that portion of the B block that is separated by 40 MHz from the H block – when an H block handset is operating nearby. GSM design precludes the intermodulation problem from occurring in voice handsets. Although the intermodulation products will affect CDMA and UMTS handsets operating in only a portion of the PCS band, the interference will nonetheless be significant to tens of millions of customers.

The tests reflect a wide variation among handsets with respect to their susceptibility to intermodulation interference. In one case, degradation occurred at -25 dBm under intermodulation conditions involving H block transmissions. In another case, intermodulation interference occurred with H block transmissions as low as -40 dBm – causing even greater concern than overload interference for CDMA and UMTS handsets.

The *NPRM's* proposal to limit H block power levels to 23 dBm would allow significant intermodulation interference into PCS handsets under the circumstances described above. This would provide for a -15 dBm H block signal in the PCS handset at a separation of one meter and a -40 dBm signal at a separation of 18 meters, and thus intermodulation could be a problem up to 18 meters (60 feet). Based on the parameters described above for analyzing overload effects, protecting PCS handsets against unwanted H block signals stronger than -36 dBm at the antenna

port would protect many typical handsets (although not the most susceptible handsets). Based on path loss, this would result in an H block power limit of 5 dBm in the upper third of the H block and 8 dBm in the middle third of the block. Under this approach, the majority of affected handsets would be protected from intermodulation at one meter and would address overload interference concerns.

ii. Out-of-Band Emissions

The need for out-of-band emissions (“OOBE”) limits on H block handset operations was evaluated by, first, measuring the sensitivity of PCS handsets, and, second, injecting additive white Gaussian noise (“AWGN”) into the handsets at the antenna port, as a proxy for the OOBE from H block operations. Dr. Jackson summarizes the results as follows:

Handset sensitivity fell in the range of –106 to –110 dBm, with all but one of the handsets having sensitivity of –108 dBm or better. Sensitivity did not vary appreciably with temperature. AWGN at –115 dBm impaired the operation of CDMA receivers with a receive signal level of –105 dBm, and AWGN at –110 dBm impaired the operation of CDMA receivers operating at a receive signal level of –100 dBm.⁶⁶

Dr. Jackson found that these test results called into question the assumptions underlying the Commission’s earlier analysis of OOBE.⁶⁷ The Commission there had assumed that OOBE would create an undesirable impairment when they reach the level of the desired signal, and that handsets would perform no better than the minimum required by industry standards. The Commission asserted that an OOBE signal would be considered harmful at a level of –102 to –

⁶⁶ Jackson Declaration at 11 (footnote omitted).

⁶⁷ See AWS Sixth Report and Order at ¶ 23.

104 dBm, and it proposed a –66 dBm limit on OOB E at the H block device, based on its assumption of 38 dB of free-space path loss at a distance of 1 meter.⁶⁸

The test results, however, showed significant impairment of PCS due to OOB E of –110 to –115 dBm. According to Dr. Jackson, the tests show “that current real-world handsets perform significantly better than are indicated by the standards.”⁶⁹ He suggested the Commission could combine the lower received OOB E level of –115 dBm with the free-space attenuation of 38 dB at one meter, resulting in an OOB E level at the H Block device of –77 dBm. Under this alternative, Dr. Jackson used the Commission’s assumption that free-space loss is the appropriate measure of attenuation between the two devices. As a second alternative, Dr. Jackson accounted for an additional 3 dB of path loss in excess of the free-space loss.⁷⁰ This would result in an estimated OOB E level at the H block device of –74 dBm, which he views as “best representing the likely real world situation.”⁷¹

The achievability of a limit in this range was confirmed by the results of an additional test. Specifically, WINLAB tested the OOB E from four CDMA PCS handsets, two GSM PCS handsets, and one UMTS PCS handset. A majority of the handsets had OOB E below –90 dBm for a 1 MHz bandwidth, and all but one had OOB E below –76 dBm; the sole exception was a GSM unit with OOB E at the level of –71 dBm. Given that the industry standard for CDMA OOB E is –76 dBm for a bandwidth of 1 MHz, and that this standard is met by virtually every

⁶⁸ See *NPRM at ¶ 91*; *AWS Sixth Report and Order at ¶¶ 23-26*. As Dr. Jackson notes, the FCC assumed no excess loss over free space in its analysis of OOB E, see *AWS Sixth Report and Order at ¶¶ 23-26*, but it assumed an excess loss of 6 dB over free space in its review of overload interference in the same physical configuration, see *id.* at ¶ 27. See Jackson Declaration at n.9.

⁶⁹ Jackson Declaration at 19.

⁷⁰ This corresponds with Dr. Jackson’s use of 3 dB of loss in addition to free-space loss in his analysis of overload. His 3 dB loss figure is based on 1 dB of antenna gain and 4 dB of loss due to blockage by users’ heads, bodies, or hands.

⁷¹ Jackson Declaration at 20.

handset and exceeded very substantially by most handsets, Dr. Jackson concludes that “a limit of -76 dBm is both reasonable from the point of view of the protection needed and probably would not impose significant costs on industry to comply.”⁷²

CTIA concurs with Dr. Jackson’s judgment here – an OOB limit of -76 dBm/MHz is reasonable. However, CTIA notes that the model used by Dr. Jackson predicted that a limit of -74 dBm/MHz would protect against harms from OOB at one meter separation⁷³; consequently CTIA believes that a limit of -74 dBm/MHz is also reasonable. CTIA also emphasizes that these measurements of OOB were made using average power as the measured quantity – not peak power. Applying a peak power limit of -76 or -74 dBm/MHz to GSM handsets would not be reasonable and CTIA is not recommending doing so.

CTIA believes the OOB limit should afford protection to A-F PCS mobile receive blocks as well as the G and H mobile receive blocks, measured as an average power level. Further, with respect to spurious emissions from H block mobile transmissions into the PCS mobile transmit band, the Commission should consider the issue of OOB limits taking into account relevant industry standards.

4. Other Technical Issues

As noted above, CTIA urges the Commission to adopt technical rules consistent with the rules set forth in Part 24 Broadband PCS, except for the power limit and OOB limit described above. Further, CTIA supports the Commission’s tentative conclusion to require that, if a licensee uses the H block for mobile operations, the 1915-1920 MHz band must be designated as the mobile transmit band.⁷⁴

⁷² *Id.*

⁷³ *See id.*

⁷⁴ *See NPRM* at ¶ 106.

The *NPRM* also seeks comment on the interference issues related to AWS operations in the upper portion of the H block, 1995-2000 MHz, given that Mobile Satellite Service (“MSS”)/Ancillary Terrestrial Component (“ATC”) mobile handset operations are authorized in spectrum immediately adjacent at 2000-2020 MHz.⁷⁵ CTIA is deeply concerned about this issue. In April 2003 comments filed in the AWS allocation proceeding, CTIA emphasized that a 0 MHz separation between the edge of a PCS base transmit band and the MSS/ATC uplink band would create significant difficulties for widespread deployment.⁷⁶ Although the *NPRM* did not propose to modify the OOB limits required of MSS/ATC mobiles,⁷⁷ CTIA urges the Commission to consider further how to address the risk of MSS/ATC uplink interference into the upper portion of the H block.

B. J Block

As noted above, CTIA supports the development of the J block. To that end, CTIA believes that the Commission should adopt technical rules consistent with the Part 24 Broadband PCS rules. Part 24 has a proven track record in being effective at encouraging the rapid deployment of advanced wireless technologies to the American public, and the Commission should extend this framework to the J block.

IV. COMPETITIVE BIDDING

CTIA believes that the public interest will best be served by licensing the H and J blocks using competitive bidding. By affording all interested parties an opportunity to compete for the new authorizations, use of the auction process ensures that the scarce spectrum resource is put to

⁷⁵ See *id.* at ¶ 97.

⁷⁶ See Comments of CTIA, ET Docket No. 00-258, at 3 (filed Apr. 14, 2003).

⁷⁷ See *NPRM* at ¶ 97.

its highest and best use.⁷⁸ CTIA therefore supports the Commission’s tentative conclusion to license these bands through competitive bidding pursuant to Section 309(j) of the Communications Act. As noted elsewhere, CTIA further suggests that it *may* be possible to use a package or “combinatorial” bidding approach and suggests this option if it proves feasible. CTIA also supports adopting the same small business size standards and corresponding bidding credits as those adopted for broadband PCS.⁷⁹

V. CONCLUSION

For the reasons set forth above, CTIA requests that the Commission establish service rules for the H and J blocks consistent with the views expressed in these comments. The regulatory approach proposed here will, CTIA believes, best serve the public interest by

⁷⁸ See Comments of CTIA, ET Docket No. 02-135, at 17 (filed Jan. 27, 2003); NextWave Personal Communications, Inc. and NextWave Power Partners Inc. (Petition for Reconsideration Public Notice DA 00-49 Auction of C and F Block Broadband PCS Licenses); In re Settlement Request Pursuant to DA 99-745 For Various Broadband PCS C Block Licenses, *Order on Reconsideration*, 15 FCC Rcd 17500, 17513 ¶ 24 (2000) (“Section 309(j) embodies a presumption that licenses should be allocated as a result of an auction to those who place the highest value on the use of the spectrum. Such entities are presumed to be those best able to put the licenses to their most efficient use.”).

⁷⁹ See *NPRM* at ¶ 119.

facilitating the rapid roll-out of advanced wireless services to the American public while protecting millions of existing PCS handsets from harmful interference.

Respectfully submitted,

/s/ Diane J. Cornell

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ATTACHMENT A

ATTACHMENT B

ATTACHMENT C